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ABSTRACT

Several factors determine whether it is in the interest of educational practitioners to utilize educational research. The first factor is the amount of work that is involved in utilizing research. Anything that makes it easier to use research weakens resistance to utilization. A second factor is the incentive structure of the schools. To motivate practitioners to use research it must be made clear that there are rewards for improving instruction and reducing costs. A third factor is whether the change proposed is a non-systemic one that can be done within the existing system, or whether the change is a systemic one that involves restructuring a system. There are systemic changes which are necessary in order to fully utilize educational technology, such as moving decision making regarding the use of media from the level of individual teachers to the level of curriculum planning. Unfortunately the present structure of incentives does not usually allow for systemic changes. When the existing incentive structure does not allow for systemic change, it is necessary to change the market structure of the schools so that desired change can occur. (Author)

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INCENTIVES AND SYSTEMIC CHANGE*

by

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The first step in understanding the problem of closing the gap between educational research and practice is to understand that the problem is not so much one of changing people's perception as it is one of changing people's actions. The problem is one of changing what people do, not just what they know, and the solution is to be found in changing the incentive structure of education that motivates people and presently hinders the utilization of educational research.

Changing research so that it is relevant to practitioners and having linkage agents to communicate research findings to practitioners fall within what Chin and Benne (1976) call "empirical-rational" strategies for change. They describe these strategies and underlying assumptions as follows:

> One fundamental assumption underlying these strategies is that men are rational. Another assumption is that men will follow their rational self-interest once this is revealed to them. A change

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> is proposed by some person or group which knows of a situation that is desirable, effective, and in line with the self-interest of the person, group, organization, or community which will be effected by the change. Because the person (or group) is assumed to be rational and moved by self-interest, it is assumed that he (or they) will adopt the proposed change if it can be rationally justified and if it can be shown by the proposer(s) that he (or they) will gain by the change.

The problem with relying on empirical-rational strategies in education is that practitioners do not always believe that they will benefit from utilizing new knowledge or new instructional technology. In addition to problems of having research conducted that is relevant to practitioners, and communicating the findings of this research, there is the problem of insuring that people have a motivation to utilize technology. There are several factors which determine whether it is in the interest of practitioners to utilize educational research.

The first factor is the amount of work that is involved in utilizing research. Research does not usually contain the concepts that action requires. In addition to causal concepts, a practitioner has to analyze options in terms of means-ends relationships, and has to separate out the independent variables he cannot control from the ones he can control.

One way to encourage the utilization of research by practitioners is to have some of the work that must be done in utilizing research done by others. This might involve

having researchers include developmental aspects in their work or might involve a new professional role. Anything that makes it easier for practioners to use research would weaken resistance to utilization.

A second factor which affects a practitioner's motivation to utilize research is the incentive structure of the schools--the way rewards and punishments are dispensed. To motivate practitioners to use research it must be made clear that there are rewards for improving instruction and reducing costs. These rewards can be internal or external, psychological or material; but there must be rewards.

It would appear that the problem of changing the schools is simply one of pointing out that there is a better way to educate students. Educators readily admit that the justification of public schools is the education of children. It would seem that anything that would help educators to further the education of children would be accepted. If one were to point out to a private business that there was a way to turn out products with improved quality and reduced costs, the new way would be accepted. Unfortunately, in the public schools there is no incentive to either increase the quality of graduates or reduce the cost of producing them. Why this is so is apparent when one contrasts schools and other public social institutions with private firms.

Public schools have no contact with the realities that private businesses face. When one enters the world of public

education competition for clients disappear. The clients of public schools are forced to attend, just as teachers are forced to serve them. Like public utilities, schools have a local monopoly. People cannot pick what public school they send their children to, anymore than they can pick their electric company. Along with public utilities, schools are tax supported self-perpetuating bureaucracies.

Private businesses and public schools may both state goals, but businesses, unlike public schools, have incentives to achieve their stated goals. A private business and a public school differ in how each is paid. A private business is paid for satisfying customers and is paid only if customers are willing to give up money to buy what private businesses produce. Public schools are paid by a budget allocation. Their revenues are allocated from a general revenue source, such as a state legislature, and are not directly connected to the quality of services they deliver. Through taxes people are forced to pay for services whether they want them or not.

Educators state that the justification for expenditures on public education is the education of the child, but expenditures are not directly related to the quality of education provided to children. Educators are paid whether or not students learn to read and write. While educators may state that they are responsible for educating children, they are not accountable for the education of children because

they are not punished and rewarded according to whether children learn.

It is meaningless to say that the public schools are responsible for educating children when the educators managing the schools suffer no consequences when students are not learning and receive no rewards when they are. Meaningful responsibility in this situation would involve rewards and punishments to those who are said to be responsible. I will coin the term "consequential responsibility" to refer to a situation in which the person making a decision is rewarded or punished for the consequences of his decision. If educators had consequential responsibility for educating children they would be paid according to the educational outcome they produced.

Public education receives its funding according to many factors, none of which is directly related to whether the educators are fulfilling their stated responsibility of educating children. They are paid from general revenues and their success at getting a share of these revenues is dependent on their ability to prove their need for funds. The people the school must please are the people who provide them with the money--not the students and parents of the students. Their consequential responsibility is to those who provide them with their budget.

Human beings behave as they are rewarded. Managers are interested in doing what they are rewarded for doing. A

business that is paid only by customers who are pleased with the company's results and performance will earn its income. A service institution that is financed by a budget, that has captive clients, that is paid for its stated good intentions whether or not they are achieved, is not likely to "earn" its income.

Private firms have incentives to cut costs because they keep the difference between the sales price and the costs as their profit. The lower the costs, the greater the profits. Managers are paid according to profits; not according to costs. There is thus an incentive to reduce costs.

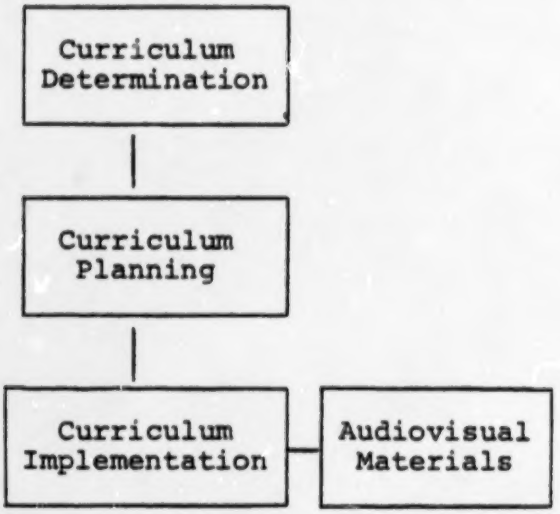
When one leaves the real world of private enterprise and enters the world of public schools, one finds managers who are preoccupied with justifying and increasing costs. Educational Managers are judged on how much money they bring into the system in terms of increased budgets. In the unreal world of public schools any attempt to cut costs is viewed suspiciously as an attack on the budget--the sacred space in legislative allocations which must be preserved at all costs.

My second suggestion for closing the gap between research and practice is to reward on the basis of achievement and not effort. If the schools received their funding for the learning outcome they produce, educational practitioners would have a strong motivation to utilize the most effective methods.

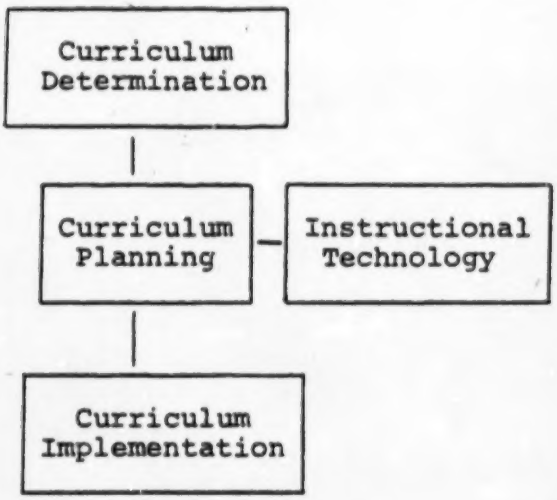
A third factor which affects the practitioner's motivation to utilize research is the nature of the change proposed; whether the change can be done within the existing system or whether the change involves restructuring the system. I refer to changes that can occur within the existing bureaucratic system as "non-systemic changes" and changes which involve altering power relationships within a system as "systemic changes."

An example of one systemic change which has been proposed for education will illustrate the distinction between "non-systemic" and "systemic change." Robert Heinich presents a model for understanding the problems of applying educational technology (1970). His model is a paradigm for understanding why instructional technology is not used correctly in the schools. It does not provide new facts about the learning process, but rather it provides insights into the problem of applying already existing knowledge. Heinich contrasts a new institutional arrangement to the traditional decision structure of educational institutions, and argues that only the new arrangement will permit the application of new instructional technologies. The new arrangement moves decision making to the level of curriculum planning, rather than leaving decisions on the use of media with individual teachers. Both the traditional and the proposed structure are shown in the diagram below: (p. 125).

Traditional Structure



Proposed Structure



It should be noted that the new organizational pattern changes the position of the teacher. Whereas in the traditional structure the teacher controls education and uses media, in the proposed structure instructional technologists intervene and the teacher is a learning resource just as the media are resources. Heinich coined a new term--"mediated teacher"--to indicate this new role. He quotes Guba's description of the traditional role,

> Moreover, decisions about how to utilize ITV in the classroom cannot be forced upon the teacher by fiat. Unless we wish to scrap completely the notion that the teacher is, in her classroom, an autonomous professional . . . we must allow her to decide at what times and in what ways to utilize the entire armamentum of devices and materials she has at her disposal, television included. (1965, p. 13)

Heinich argues that the traditional role of the teacher is a constraint on the use of technology

> At present, instructional developers operate under the constraint of each professor's full authority to use or discard, but this constraint should not be accepted as unchangeable, and I am surprised that many instructional developers are timid on this point. (p. 170)

There are, of course, many valuable changes that can be made within the context of the traditional role of the teacher. Within that context teacher's might be encouraged to use better instructional products and to present materials more effectively. But there are other valuable changes which cannot be made without systemic change. In fact educational research cannot be fully utilized unless it is possible to change entire systems.

Robert Heinich claims that the existing social relations of production in education are such that educational technologies cannot be used. He argues that it is necessary to change institutional relations in education in order to utilize the new technologies. The model is a paradigm for a social revolution in the structure of the schools, and as such it is instructive to compare his model to other models of revolution. One parallel model is found in Thorstein Veblin's *The Engineers and the Price System* (1965). In this work Veblin argues that if new industrial technologies are to be utilized, production engineers will have to seize power from the financial interests. What Veblin and Heinich both argue is that existing social relations of production are such that technologies cannot be used and that in order

to use new technologies it is necessary to change institutional relations.

Many innovations related to the application of the new instructional technologies involve mediated instruction. That is, the new innovations would have a variety of media for the presentation of instruction and use the media that is most appropriate to each instructional unit. Teachers are considered media just as movies, tapes, computer-based instruction, and self-instructional materials are. Were instructional technology to be used to its fullest, the existing pattern of students sitting in classes for set hours listening to a teacher would be totally changed. The use of instructional technology could result in changing the budget as regards the number of teachers, classrooms, hours of students in the classroom, and number of administrators necessary to supervise the teachers. A large scale introduction of instructional technology would make education capital-intensive, thus reducing the portion of the budget related to teachers and administrator's salaries.

Schools will accept many innovations. They welcome the introduction of modern physical plants. Curriculum changes that do not alter the bureaucratic organization, staffing patterns, or existing rules are always welcome. New data processing methods for budgeting and accounting procedures are readily adopted. Especially welcome are workshops that administrators can demand teacher's attend,

providing that those workshops are highly visible and do not commit the schools to changing anything. Schools welcome programs that bring in money and don't require them to do anything other than alter their vocabulary.

There are many innovations that schools have no desire to adopt. Schools are not interested in anything that might endanger their budget and this includes differentiated staffing that might reduce the number of teachers, capital intensive instructional technologies that might reduce the number of teachers, and new market organizations schemes such as vouchers. Proposals to take instruction out of classrooms by using self-instructional materials, television, or computer based instruction can be expected to meet with hostility from educators.

The innovations that are accepted or rejected by public schools differ markedly from those that would be accepted by a private firm. Public schools are not likely to accept innovations that improve economic efficiency. They are likely to accept innovations that involve greater spending, provided of course, that an outside source provides the revenues. In contrast a private firm will accept innovations that cut costs and reject innovations that increase costs.

Public schools are not likely to accept any innovations that change authority patterns within the schools. Because schools are not rewarded for outcomes, they turn inward toward concern for keeping the system going. Those innovations

that are accepted are those that are compatible with the existing organization of the bureaucracy. There is no incentive for making the kind of systemic change recommended by Robert Heinich.

There are important implications of this analysis for Research and Development policies.

By analyzing the incentive structure of public education one can predict the types of innovations the schools will accept. This can help to prevent the situation of spending money on research that cannot change practices. John Pincus (1974) suggests three things that might be done to insure that funds for research and development result in changing practices in education:

Suggestions by John Pincus

> Adopt R & D policies that appeal more effectively to the existing set of bureaucratic incentives; and also policies that attempt to modify those incentives.
>
> Adopt policies that permit the public, acting through a variety of institutional means, to assess more accurately what the schools are doing and how well they are performing.
>
> Introduce changes in the market structure of the schools that will facilitate innovations. (1974, p. 129)

In order to determine whether a particular innovation will be accepted it is necessary to consider whether the existing structure of incentives is consistent with the acceptance of that innovation. If it is, then there should be no problem; but if the incentive structure is not

cause many of the corporations and agencies otherwise interested in the educational market to hold back." (1972, p. 142) Private enterprise is not involved in the Alum Rock experiment.

Another proposed incentive structure is the concept of a youth endowment. Youth endowment plans would provide a set amount of money for each person's education at the public expense. The money might be spent at any point in a person's life and might be used for any type of education including vocational, crafts, or the more traditional college preparatory followed by college. Youth endowment programs would foster the development of private educational firms which would hopefully utilize research findings in order to gain a competitive advantage in the educational market that would be created.

Another proposal is for performance contracting. Under this proposal schools would contract to improve students' performance as measured by competency based tests and would be paid only if they could demonstrate that they are accomplishing something. This would take the place of the present system of paying for attendance. As regards the utilization of research, performance contracting would not necessarily involve private business or encourage the influx of funds for capital intensive technologies.

An analysis of the reward structure of public education indicates that the desirable features of a competitive

market are lacking. There are proposals, such as the voucher system, which purport to introduce the best elements of the market system into public education. I have claimed that the utilization of desirable instructional technologies depends upon changing the incentive structure of public education. Whether I am right about my claims, whether an alternate structure such as a voucher system would be an improvement, remains to be seen.

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